

# Collaborative ICT for Indian Business Clusters

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## ABSTRACT

Indian business clusters have contributed immensely to the country's industrial output, poverty alleviation and employment generation. However, with recent globalization these clusters can loose out to international competitors if they do not continuously innovate and take advantage of the new opportunities that are available through economic liberalization. In this paper, we discuss how information and communication technologies (ICT) can help in improving the productivity and growth of these clusters.

### Categories and Subject Descriptors

K.4.3 [Computers and Society]: Organizational Impact – *Automation, Computer supported Collaborative work, Employment*

### General Terms

Management, Design, Economics, Human Factors

### Keywords

SME clusters, India, Emerging markets, ICT

## 1. INTRODUCTION

Clustering of small firms is much sought-after in promoting the growth of MSMEs<sup>1</sup> in developing and developed world [1]. MSMEs have employees ranging from 5 to about 500. Individual firms because of small size cannot achieve economies of scale in production, advertising and sales, which are possible for large enterprises. However, the individual firms in a cluster can succeed by closely collaborating with other small firms of the same industrial sector and located in the same geographical area. At the cluster level, the enterprises can share orders and subcontract parts of the production where needs cannot be supported individually. The biggest success stories of clusters have been from Italy [2], where the small firms are leading exporters of high-quality goods. In developing countries like India, the barriers of entry for large firms is high because of several extraneous factors like limited resources, government policies, etc. Therefore, the clusters of small firms can be the perfect engines for industrial growth.

<sup>1</sup>MSME: Micro, Small and Medium Scale Enterprises. According to Government of India, micro enterprises have investment up to \$22K, small scale enterprises have investment of \$22K-\$220K, while the medium-scale enterprises have investment of \$220K-\$2.2 million.

No of Clusters	2042
No Of Units	1.5 million (avg: 700/cluster)
Manufactured Exports from India	60%

Table 1: Impact of SME clusters on Indian Economy

## 2. INDIAN CLUSTERS: CURRENT STATUS

Clustering is a known phenomenon in Indian context and has played a significant role in the nation's industrial growth and diversification. In terms of employment generation, the business clusters are just second to agriculture. The impact of SME clusters on India's economy has been tremendous as shown in Table 2. One very illustrative cluster [1] is Tiruppur cluster of Tamil Nadu. This cluster has around 7000 SMEs and contribute to 80% of the country's knitwear exports.

Nevertheless, despite these striking figures, most Indian clusters are not performing to their full potential [3]. Based on case studies of many clusters, main reason for underperformance is lack of co-operation among the cluster-actors. Multiple factors have led to this problem: (a) informal communication (lack of formal and legal framework for joint operations leads to mistrust) (b) lack of understanding of the benefits of simultaneous competition and co-operation (c) lack of knowledge sharing (d) fear of loosing out in competition (e) lack of effort in developing collective goods and common activities. Only recently, through the intervention of external support institutions like UNIDO, SIDBI, SIDO etc, there have been strong cluster-development initiatives to forge strong intra-cluster network and establish external network linkages. ICT can significantly complement cluster-growth initiatives by formalizing cluster operations and reducing transaction costs for common activities. However, till now, not much attention has been paid to understand the potential utility of ICT in achieving these. Therefore, we feel that this is the opportune moment to take a look at the potential merits of ICT adoption and investigate whether a fresh approach is needed to build solutions specific for developing regions like India.

ICT adoption by the Indian clusters is extremely low. The industry estimates that the ICT adoption among small business in India is less than 30%, and if the IT firms in the SME segment are not considered, the number will be significantly less. For example, in Karnataka, the IT penetration is less than 1% among the 700,000 small scale manufacturing firms. The main reasons for low adoption are:

1. **Reluctance to adopt technology:** The first-generation small firm owners are not technology savvy and are extremely apprehensive to adopt new technology.
2. **High cost of enterprise solutions and unsuitability for Indian markets:** Current IT solutions from multi-national vendors are mainly stripped down versions of the solutions of the developed world and do not satisfy the specific requirements of Indian business.
3. **Low level of telecom density, especially in rural and semi-urban areas:** Many clusters are located in semi-urban areas or rural areas and therefore, cannot avail the benefits that communication can bring in. The telecom operators do not find it profitable to run business in these areas.
4. **Lack of funds:** The small firms of India have significantly less funds compared to their counterparts of the western world and therefore, they cannot adopt any readily-available solution used in the developed nations.

### 3. BELLARY CLUSTER: A CASE STUDY

To understand the cluster requirements, we did a field study of Bellary Jeans cluster, located in north of Karnataka, India. Bellary consists of 800 small firms manufacturing jeans, which cater to the lower-middle market segment of South India. The merchant manufacturers buy fabric from local and Mumbai dealers, divide the jeans-making process into eight to ten operations (e.g., sewing, washing, etc.) with each operation being outsourced to small firms, and package the final products for sale. Fig. 1 describes the supply chain of the Bellary Jeans cluster [1]. This has been traditionally a very conservative cluster and suffers from multiple deficiencies: (a) lack of strong customer-supplier relationship (b) low quality (c) lack of planning, (d) high lead time (e) informal practices. However, recently the business owners, due to the opportunities of doing business with established garment retailers and increasing competition from China, Bangladesh, etc, feel the need to address these issues through co-operation, public-private participation and formal linkages .

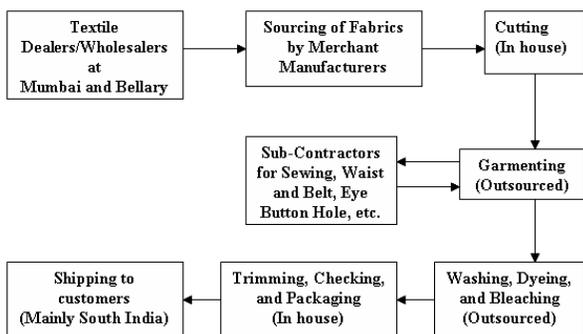


Figure 1: Supply Chain at Bellary Jeans Cluster

We also found that the usage of computer is very limited and the solutions used are only stand-alone accounting software. At present, the orders are procured informally and in an ad-hoc manner. This affects the productivity and growth

of the cluster immensely. There is a need for ubiquitous connectivity and formal integration of operations to improve the supply chain operations of the cluster. IT solutions like collaborative commerce can help the enterprises in the cluster to integrate processes and form an effective digital ecosystem [4]. The challenge is to build a cost-effective ICT solution, which can be widely affordable and easily deployable within the cluster. Connectivity needs can be supported by building an operator-less collaborative network (Fig. 2), in which the cost of deployment can be largely reduced by sharing expensive resources like spectrum, networking equipments, computing resources, storage, etc. Enabling technologies should also facilitate distributed management, decentralized ownership and chaotic deployments.

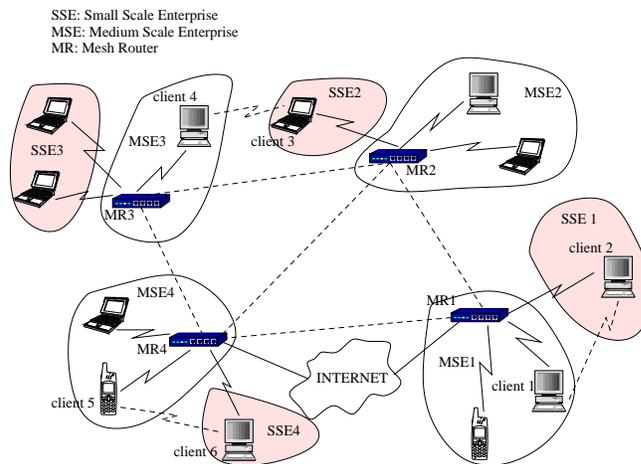


Figure 2: Operator-less Collaborative Network

### 4. CONCLUSION

Here, we have brought into focus the importance of providing ICT solutions to the Indian business clusters. Currently, there exists a digital divide between the small firms of India and corresponding firms of the western world. Cost-effective customized solutions are needed to suit the specific needs of small firms in these clusters. Building such solutions needs knowledge from several disciplines like communications, networking, economics, social science and electronic commerce.

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### 6. REFERENCES

- [1] United nations industrial development organization (unido). In *www.smeclusters.org*.
- [2] P. Bianchi, L. M. Miller, and S. Bertini. The italian sme experience and possible lessons for emerging countries. In *Executive Summary, UNIDO*, March 1997.
- [3] T. Sarkar. (Editor). Working together works: cluster case studies. *Foundation for MSME Clusters*, New Delhi, India, 2006.
- [4] A. Lavrin and M. Zelkoi. Knowledge Sharing in digital ecosystems for small and medium enterprises. In *ISCC*, Sardinia, Italy, June 2006.